

Intended for experimental study, physics laboratory and carrying out physics experiments on: Physics. Kinematics. Horizontal launch, range, uncertainty and impact speed. Measuring the launch height and range. The uncertainty of the range measurement. Decomposing the parabolic motion into two rectilinear motions. Calculating the final resulting speed, impact speed. The range in an oblique launch. Decomposing the parabolic motion of the projectile into two rectilinear motions. Determining the range with the measured values of the launch speed, inclination and flight time. Determining the range, regardless of the flight time. Oblique launches with different flight times and initial speeds, keeping the angle constant. The relationship of the range with the initial speed and flight time, keeping the launch angle constant. The maximum height in an oblique projectile launch, sensors. The maximum height from the measured values of the flight time and launch speed in a 45 degree launch. The horizontal and vertical components of the launch speed. How to determine the final resultant velocity, impact velocity, from its horizontal and vertical components. Oblique launch, range as a function of the launch angle, sensors. Parabolic motion of the projectile in an oblique launch. Expression for calculating the range as a function of the launch velocity, inclination and flight time. Conservation of mechanical energy. Determination of the maximum height in a vertical launch from the conservation of mechanical energy. The values of the initial potential energy and kinetic energy. The values of the final potential energy and kinetic energy. Using the principle of conservation of mechanical energy to

calculate the maximum height and compare it with the measured value. The percentage relative error. Vertical launch, maximum height and conservation of mechanical energy, sensor. Measuring the initial velocity of the sphere in a vertical launch. Conservation of mechanical energy. Determination of the maximum height of the sphere (projectile) from the conservation of mechanical energy. Measuring the initial velocity in an oblique launch and determining the maximum height by conservation of mechanical energy. The diameter of the sphere. Measuring the initial velocity of the throw at 45 degrees. Determining the maximum height of the sphere from the conservation of mechanical energy. Conservation of momentum, kinetic energy and coefficient of restitution in an elastic collision. The masses of the spheres. Measuring the velocity of sphere 1 before the collision. Measuring the angle between the positions of sphere 1 and sphere 2, at the points of impact with the ground. Determining the time of fall of the spheres. Determining the horizontal components of the velocity of the spheres, after the collision. The quantities of partial and total movements, before the collision. The quantities of partial and total movements, after the collision. The partial and total kinetic energies, before the elastic collision. The partial and total kinetic energies, after the elastic collision. Determining the coefficient of restitution and classifying the type of collision, etc.

Knowledge areas

Physical

Level

Graduation - High School

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